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ABSTRACT

Reading teachers vary in their teaching methods for reading instruction, usually emphasizing either the meaningful functions (meaning) or the technical features (coding) of written language. This paper reviews literature on the meaning/coding dichotomy and focuses on a "cognitive clarity theory" that stresses linguistic awareness and reading-skills development through an understanding of both the functional and the featural concepts of written language. The paper concludes that reading instruction should give equal weight to both meaning and code, so that children understand how reading tasks integrate both aspects. (RL)

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Learning to read with understanding

JOHN DOWNING

Every reading teacher has a theory of how children learn to read. Every reading instruction program is based on some model of the learning-to-read process, whether it is made explicit or not. The way we teach reading depends on our beliefs about how children naturally develop reading skill. The great theoretical rift between teachers has been over "look-say" versus "phonic" methods. Chall (1967) reclassified teaching methods into "meaning emphasis" and "code emphasis" approaches because she found that teachers and authors of reading textbooks placed more importance either on teaching children the meaningful functions of written language or on the technical features of the printed code for the spoken language. A similar dichotomy of methods seems to exist in every language (Downing, 1973). Even in Chinese, where most people would believe that phonics is impossible because of the logographic writing system for Chinese morphemes, the printed characters can be analyzed into their parts just as printed words can be in English. Thus teachers everywhere discuss the relative merits of meaning emphasis versus code emphasis approaches.

Currently in the United States the code emphasis is in fashion, but there are signs that meaning emphasis is about to make a comeback in the next swing of the pendulum. The two reading theories most likely to ride the crest of this new wave of meaning emphasis teaching methods in American schools are those of Goodman and Smith.

SMITH AND GOODMAN

Smith and Goodman both believe that listening and reading are parallel active processes. Thus Smith (1971) claims that "reading is an aspect of language, only superficially different from the comprehension of speech...,"

and Goodman (1976) states: "...reading is language. It's one of two receptive language processes. Speaking and writing are the generative, productive language processes. The other receptive language process is listening. Reading and listening, at least for the literate, are parallel processes." According to Goodman, readers "construct the meaning" on the basis of their past experience of language. School beginners, he asserts, "are already possessed of a language competence and an ability to learn language which are powerful resources." Smith's view is that "speech and writing are both aspects of the same language..., and it is generally quite an unfounded assumption that reading instruction must involve teaching children about language." On the contrary, "the vast majority of children have a firm grasp of language by the time they get to school..."

The essence of the reading process according to Smith and Goodman is the construction of meaning. They strongly reject the code emphasis approach. Phonics for Smith is a "vague but laudible concept", "a hope underlying a teaching technique", and a "Spartan deprivation of outside help in word identification." Smith argues that, "'Converting' a written message into verbal form does not itself provide the meaning, it merely interposes an additional stage in the process of comprehension." Goodman also attacks "instructional reading programs that begin with bits and pieces abstracted from language, like words or letters, on the theory that they're making learning simpler," but "in fact make learning to read harder," because it "isn't language any more."

According to the Smith/Goodman theory, children do not need to be aware of the parts of language. For example, Goodman and Burke (1976) comment: "The language and thought processes which the child is using are abstract and complex. But as a language user he is not called upon to understand them, only to make use of them." More generally, "In order to communicate, speakers,

listeners, readers, and writers must follow a similar set of rules. These are not rules of which the language user is consciously aware. In fact, in most cases, people cannot state or explain the language rules they use."

LINGUISTIC AWARENESS

Psycholinguistic studies lend support to Goodman's and Smith's description of the reading process as a search for meaning. But two of the chief contentions in the Smith/Goodman theory do not accord with some recent developments in linguistics.

Firstly, Mattingly (1972) has listed a number of important ways in which listening and reading are different processes--not parallel as Goodman and Smith believe. Therefore, Mattingly concludes:

> Reading is seen not as a parallel activity in the visual mode to speech perception in the auditory mode; there are differences between the two activities that cannot be explained in terms of the difference of modality. They can be explained only if we regard reading as a deliberately acquired, language-based skill, dependent upon the speaker-hearer's awareness of certain aspects of primary linguistic activity. By virtue of this linguistic awareness, written text initiates the synthetic linguistic process common to both reading and speech, enabling the reader to get the writer's message and so to recognize what has been written.

The second difficulty for the Smith/Goodman theory is provided by Mattingly's description of the role of "linguistic awareness" in learning literacy skills. He states that "the relationship of the process of reading a language to the processes of speaking and listening to it... is much more

devious than it is generally assumed to be. Speaking and listening are primary linguistic activities; reading is a secondary and rather special sort of activity that relies critically upon the reader's awareness of these primary activities." Mattingly accepts that much primary linguistic behavior is not accessible to immediate awareness. However, people are aware of certain aspects of their own language behavior, and some of these are related to the writing system of their language. Mattingly states that the reader "must be thoroughly familiar with the rules of the writing system." These may include the rules that relate written language to the elements of speech that are accessible to awareness. We may add that doubtless the creators of writing systems based their rules on this same linguistic awareness that exists in the teachers and students of reading today. Thus learning to read for individual students is in a way rather like reinventing the alphabet and spelling with their natural endowment of linguistic awareness.

The Soviet psychologist, Luria, has arrived at a similar conclusion based on a series of experimental investigations in Russia. His view is known in the U.S.S.R. as the "glass theory." For instance, Luria is cited by Elkonin (1971) as stating:

> While actively utilizing grammatical language and while defining with words the corresponding objects and actions, the child cannot make a word and verbal relationship the object of his awareness. During this period, the word may be used but not noticed by the child, and frequently it presents things seemingly <u>like a glass, through which the child looks at the surrounding world, not making the word itself the object of awareness</u>, and not suspecting that it has its own existence, its own aspects of construction (italics added).

Elkonin has developed a method for developing children's awareness of the elements of language because he believes that: "The development of awareness of the language's phonological aspect... represents one of the most essential preconditions for... learning literacy."

Elkonin (1973) has reported his experiments with various teaching methods that make it easier for children to conceptualize the elements of language. For example, plain counters can be used to represent phonemes in finding out how many phonemes exist in a word. Or counters of different colors can represent different kinds of phonemes. He has shown that Russian kindergartners can be trained to discriminate between vowels, hard consonants, and soft consonants in Russian speech. Awareness of these differences in spoken Russian are essential if the child is to understand the logical rules of the Russian writing system. All this is done before the teacher introduces written letters. The advantage seems to be that the child then only has to make one step into the unknown when introduced to the written form of language. When letters and printed words are introduced the child already understands what "a word" is and what "a phoneme" is. The child already understands the idea of the continuity of speech and how it is related to its parts. The main technical linguistic concepts which the teacher needs to use to explain how writing is related to language are already known to the child. Some of Elkonin's techniques have been adapted for the English language in Canadian kindergartens and found feasible and successful (Ollila, Johnson and Downing, 1974).

Cazden (1974) in the U.S.A. has commented: "Our concern as educators with this particular kind of language performance comes from increasing arguments that it is at least very helpful--and maybe critically important--not so much in the primary processes of speaking and hearing as in what may

be considered the derived or secondary processes of reading and writing."

Cazden proposes that linguistic awareness develops naturally through play. The "glass" of language becomes opaque through children's playful manipulation of the sounds of language outside their use in meaningful communication. For example, Johnson (1972) describes a two-year-old saying as he was being undressed, "Nolly lolly, nolly lolly, nilly lolly, sillie Billie, nolly lolly." Piaget's (1959) type of ego-centric language that he terms "repetition" seems to have a similar function in play. Thus linguistic awareness is a natural phenomenon, although it's development in children can also be fostered deliberately by adults, as in the experiments of Elkonin. In denying the possibility that linguistic awareness may be a factor in learning to read, Goodman and Smith seem to overlook the human tendency to reflect upon and speculate about one's own behavior and other people's acts. There is no reason to suppose that language behavior must be excluded from such natural introspections and observations. Indeed, as will be shown later in this article, there is growing evidence, that children develop linguistic awareness in learning to read and that this awareness is associated with literacy achievements.

REASONING ABOUT READING

When an individual is required to learn a new skill, his first reaction is to try to understand what he must do to become a skilled performer. Fitts and Posner (1967) found in their review of psychological research that this effort to comprehend the learning task is characteristic of all skill development. They describe this initial approach to the task as the "cognitive phase." In it the beginner tries to find out the functions of the skilled act and its component subskills, and the technical concepts needed for

talking and thinking about the tasks involved in mastering the skill. This suggests that reasoning may play a part in skill learning and that this reasoning may be especially important in verbal skills such as reading. Indeed, there is considerable evidence from research that this is so.

In her more recent survey of research on reading disability, Vernon (1971) concludes:

> It would seem that in learning to read it is essential for the child to realize and understand the fundamental generalization that in alphabetic writing all words are represented by combinations of a limited number of visual symbols. Thus it is possible to present a very large vocabulary of spoken words in an economical manner which requires the memorizing of a comparatively small number of printed symbols and their associated sounds. But a thorough grasp of this principle necessitates a fairly advanced stage of conceptual reasoning, since this type of organization differs fundamentally from any previously encountered by children in their normal environment.

Earlier Vernon's (1957) review of research on the causes of reading disability led to her conclusion that "the fundamental and basic characteristic of reading disability appears to be cognitive confusion and lack of system.... It must be attributed to a failure in analyzing, abstraction and generalization, but one which, typically, is confined to linguistics." Vernon said that "the fundamental trouble appears to be a failure in development of this reasoning process." She described the cognitively confused child as being "hopelessly uncertain and confused as to why certain successions of printed letters should correspond to certain phonetic sounds in words."

Several investigations have shown that an important difference between normal readers and disabled readers lies in the inferior conceptual and integrative abilities of the latter (Klapper, 1968; Robinson, 1953; Serafica and Sigel, 1970). Vernon (1971) believes that reasoning and understanding are characteristic of the normal development of reading skill. She states: "The employment of reasoning is almost certainly involved in understanding the variable associations between printed and sounded letters. It might appear that certain writers suppose that these associations may be acquired through rote learning. But even if this is possible with very simple letter-phoneme associations, the more complex associations and the correct application of the rules of spelling necessitate intelligent comprehension." Vernon (1957) indicates that "cognitive confusion" is the normal state of the young beginner. Therefore, it would seem that an important part of learning to read consists in reasoning about the reading task in an effort to achieve cognitive clarity. If cognitive confusion is the chief characteristic of reading disability then cognitive clarity would seem to be the mark of success in learning to read.

THE COGNITIVE CLARITY THEORY

The cognitive clarity theory of learning to read emphasises the learner's striving to understand the tasks he is required to undertake in reading instruction. It may be expressed by eight postulates: (1) Writing or print in any language is a visible code for those aspects of speech that were accessible to the linguistic awareness of the creators of that code or writing system; (2) this linguistic awareness of the creators of a writing system included simultaneous awareness of the communicative function of language and certain features of spoken language that are accessible to the

speaker-hearer for logical analysis; (3) the learning-to-read process consists in the rediscovery of (a) the functions and (b) the coding rules of the writing system; (4) their rediscovery depends on the learner's linguistic awareness of the same features of communication and language as were accessible to the creators of the writing system; (5) children approach the tasks of reading instruction in a normal state of cognitive confusion about the purposes and techniques of literacy; (6) under reasonably good conditions, children work themselves out of the initial state of cognitive confusion into increasing cognitive clarity about the functions and technical characteristics of written language; (7) although the initial stage of literacy acquisition is the most vital one, cognitive confusion continues to arise and then, in turn, give way to cognitive clarity throughout the later stages of education as new subskills are added to the student's repertory; (8) the cognitive clarity theory applies to all languages and writing systems. The communication aspect is universal, but the technical coding rules differ from one language to another. For instance, in languages that have an alphabetic writing system, linguistic awareness of the phoneme is more important than awareness of the syllable, whereas in languages with a syllabary (such as Japanese) awareness of the syllable is more important than awareness of the phoneme.

This listing of the postulates of the cognitive clarity theory has been kept simple deliberately, but it may suggest an oversimplified view of speech and writing. For example, in English there have been many creators of the writing system in its thousand years and more of history. Nevertheless, the learner's task is still to try to understand the intentions of those who created and modified the orthography of the language of instruction.

This cognitive clarity theory of reading does not entirely conflict with the theories of Goodman and Smith. What is suggested rather is that the important truth they have uncovered is only one part of the learning to read process. Their emphasis on the reader's search for meaning by predictions based on past experiences of language is a focus on the communication function of the reading act. But there are two parts to the child's rediscovery of written language: (1) understanding its communicative functions; and (2) understanding its technical features. A complete explanation of learning to read must take account of how the child understands the features as well as the function of writing and print.

FUNCTIONAL CONCEPTS

Piaget showed that children of the typical school beginning age have relatively little awareness of the communication function of language. Vygotsky (1962) reported that young beginners have "only a vague idea" of the "usefulness" of writing. More recently Reid's (1966) research in Scotland found that five-year-olds begin school with a general lack of any idea "of the purpose and use" of writing or print. A replication of her study led to the conclusion that "young beginners have difficulty in understanding the purpose of written language" (Downing, 1970).

Two investigations have shown how environmental experiences may influence the growth of children's concepts of the purpose of writing. In the first (Downing, Ollila and Oliver, 1975), two groups of Canadian Indian beginners were found to be significantly less aware of the purposes of reading and writing than were non-Indian beginners attending the kindergarten classes in the same school districts. This supported the hypothesis that the Indian children's concepts of the functions of writing are less well developed

because they come from a home background with no cultural tradition of literacy. In a second study (Downing, Ollila and Oliver, in press), it was found that children from the economically poorest third of the population in a Canadian city began kindergarten with significantly less understanding of the functions of writing than children from the better off two-thirds of the population in the same city. Thus children develop understanding of the functions of literacy through observing and sharing communication activities in written language.

Probably the most important single fact about the process of reading is that the purpose of the reading act is inextricably interwoven in its technique. In other words, the ends are an integral part of the means. Many researchers on the psychology of the reading process have recognized this fact (Bond and Tinker, 1973; Gray, 1917; Judd and Buswell, 1922; Postman and Senders, 1946; Rickards and August, 1975; Russell, 1970; Thorndike, 1917). Different purposes require different reading techniques, and these have been revealed by scientific observations of readers' behavior.

The Bullock Report in England (Department of Education and Science, 1975) strongly recommends that purpose be integrated with skill development:

> Competence in language comes above all through its purposeful use, not through the working of exercises divorced from context.
>
> Language development... involves creating situations in which, to satisfy his own purposes, a child encounters the need to use more elaborate forms and is thus motivated to extend the complexity of language available to him.

These recommendations from this official government report are cognizant of the principle that concepts are learned from experience with their exemplars.

Therefore, teaching an understanding of the functions of written language requires the provision of experiences with reading and writing activities that are purposeful for the individual student.

One successful application of this principle has been seen in many American schools using the language-experience approach to reading. Particularly effective have been the programs developed under the leadership of Professor Harry Hahn at Oakland University in Michigan. Several years ago he introduced the idea of "young authors' conferences." At these meetings, children from schools in an area meet with each other and with adult authors of published children's books to confer about the techniques and purposes of creative writing. The Bullock Commission notes that "The novel features in the task and the language it demands can be explored in discussion with the individual or the group, and supporting examples collected and worked upon. The child should thus be led to greater control over his writing, with a growing knowledge of how to vary its effects."

A different approach to developing awareness of the process and functions of communication is being developed in an experimental school in Moscow by Professor Elkonin of the Academy of Pedagogical Sciences of the U.S.S.R. In the primary grades a new system of symbols is being created that provide a code for a functional description of the relations between thought, speech, and writing. Children use this code for analyzing problems of communication individually and in class discussion.

Thus both Hahn in America and Elkonin in Russia are using discussion procedures to develop children's awareness and understanding of the communication functions of written language.

FEATURAL CONCEPTS

The second major category of problem solving tasks that face the child in learning to read is understanding the technical linguistic concepts needed for reasoning about the relationships between speech and writing. A number of researchers (Chappell, 1968; Holden and MacGinitie, 1972; Huttenlocher, 1963; Karpova, 1955), using a variety of research methods have found that the speech segments of the child's perception do not coincide with the units "word" or "phoneme" as usually understood by adults. A second approach to the same problem has been to study how children interpret and use such technical terms as "word," "sound," "letter," "number," "reading," "writing," and so on. Reid's study of Scottish five-year-olds found that these children exhibited considerable confusion about the meaning of such linguistic terms, and they did not know how adults read. Reid concluded that they had "a great poverty of linguistic equipment to deal with the new experiences" in reading instruction.

A replication of Reid's study confirmed her findings (Downing, 1970). This replication was extended to test children's interpretation of two technical terms that are used in reading instruction to refer to features of speech. Following appropriate pretraining in the experimental procedure, five-year-olds were asked to say whether each of a series of auditory stimuli was "a word" or not. Five types of stimuli were used: a non-verbal sound, a meaningless vowel phoneme, a single word, a phrase, and a sentence. No child's category for "a word" coincided with the usual concept of a spoken word held by teachers. Some children made only random guesses, some excluded non-verbal sounds, and some thought that only the word, the phrase, and the sentence were each "a word." The experiment was repeated at three intervals during the first school year, but, although responses were

progressively in the direction of interpreting "a word" as a chunk of meaningful speech, no child achieved what teachers would usually consider to be the concept of "a spoken word" by the end of the year. Similar results were found for the term "sound," although some pupils understood it as meaning a phoneme by the final testing session (Downing, 1970, 1972). Canadian children exhibit the same confusion (Downing and Oliver, 1974).

Nor are beginners less cognitively confused about the terms used for units of written language such as "word," "letter," "number," and so on. For example, Meltzer and Herse (1969) asked American kindergartners and first graders to cut off a word with scissors from a sentence printed on a card. Occasionally a word was cut off, but often it was two words and sometimes a part of a word. A variety of different testing procedures have demonstrated the same confusion in children's understanding of the technical features of written language: Clay (1972) in New Zealand; Kingston, Weaver and Figa (1972) in the United States; Turnbull (1970) in Australia.

How the development of a clear understanding of these technical features is related to learning to read is indicated by four investigations.

Francis (1973), in her study of English primary school boys and girls, found that her highest correlation was between reading achievement and knowledge of a technical linguistic vocabulary, even with general vocabulary knowledge controlled. She concluded that "factors independent of a general ability to deal with abstract concepts were involved in learning technical vocabulary, and that these were closely related to the reading process." She believes that, under current methods of instruction, children learn these technical concepts by groping their way through mostly unplanned experiences of hearing the technical jargon used by their teachers. Francis writes:

> It was as though the children had never thought to analyze speech, but in learning to read had been forced to recognize units and subdivisions. The use of words like letter, word and sentence in teaching was not so much a direct aid to instruction but a challenge to find their meaning.

This technical language of reading instruction is part of what DeStefano (1972) has called the "language instruction register"--the specialized language used in talking and thinking about teaching and learning language skills. Some idea of the confusion in the mind of an individual who is not yet fully initiated into the mysteries of the language instruction register may be gathered from the following passage:

> I'm going to sove some mivvirs. See these mivvirs. Their names are snow and orsh. They say "haagh." Who knows a zasp with the tauf "haagh" in it?

Translated into the actual register it is still nonsense to the beginner: "I'm going to write some letters. See these letters. Their names are sea and aitch. They say 'haagh' (as in Scottish Loch Ness). Who knows a word with the sound 'haagh' in it?" The young beginner, of course, cannot translate but must puzzle out the meanings of these technical terms by observing exemplars and non-exemplars. Moreover the terms used in the above passage are merely the simplest examples of the many phonological and syntactical concepts needed for talking and thinking about features of spoken and written language.

Two of the studies referred to earlier in this article also provide evidence on the effects of the child's environmental experiences on the development of featural concepts. In the comparison of Indian and non-Indian kindergartners the former were found to be significantly more immature in their understanding of featural concepts than were the latter (Downing,

Ollila and Oliver, 1975). In the survey of kindergarten children in a Canadian city, this test also found a significant difference favoring the upper two-thirds socioeconomically in comparison with the lowest third in respect of the development of featural concepts. This difference remained significant even after a year of kindergarten education. Furthermore, these results were quite highly correlated with more traditional tests of reading readiness, notably those of letter-name knowledge and auditory discrimination that are well-known to be the best predictors of later attainments in reading (Downing, Ollila and Oliver, in press). This correlation suggests that the test of featural concepts and the more traditional reading readiness tests probe the same underlying basic factor--the child's cognitive clarity or confusion about the featural concepts used in reading instruction.

A fourth study that shows a significant relationship between reading ability and the development of featural concepts is that by Calfee, Lindamood, and Lindamood (1973). Children from grades ranging from kindergarten to grade 12 were tested to determine their ability to match phonetic segments by use of a sequence of colored blocks to represent auditory stimuli. They were tested also for reading and spelling achievements. The results showed that more than 50% of the total variance in reading ability could be predicted from the student's ability to perform this extremely simple acoustic segmentation task. Calfee et al added: "The major implication of these findings was that relatively simple phonological skills are significantly and substantially related to reading and spelling performance through high school."

The research findings reviewed in this section of this article indicate that the child's understanding of the features of speech and writing as well as linguistic awareness are important in the development of reading skill. This is the other component of cognitive clarity that the child must develop in understanding the tasks of reading and writing.

COMPREHENSIVE METHODS

In this article I have attempted to show that learning literacy skills consists mainly in the child's rediscovery of the greatest invention of civilisation--writing. That invention involved two creative ideas. The first was that meaning could be communicated graphically instead of vocally. The second was in the specific system of written symbols devised for the new visible language. In every language this writing system has been subject to many modifications by its more creative users in the history of its development. These developers of written language employed their own natural linguistic awareness in their creative work. The same natural linguistic awareness is used by children in rediscovering the features of the writing system of their language. They also need experiences that will lead them to discover the functions of written language in communicating meaning. The successful reader has developed cognitive clarity through understanding both aspects of the task: (1) its functions, and (2) its technical features. Therefore, what may be needed at this time, rather than a simple rebirth of meaning emphasis methods in reading instruction, is a more comprehensive theory that takes account of both aspects of learning to read. This should be a theory of instruction in reading that should give equal weight to both meaning and code, deliberately not overemphasizing one aspect or the other because that may mislead the child's understanding of the total task which does in truth integrate both aspects.

References

Bond, G. L., and M. A. Tinker. Reading Difficulties: Their Diagnosis and Correction. New York: Appleton-Century-Crofts, 1973.

Calfee, R. C., P. Lindamood, and C. Lindamood. "Acoustic-Phonetic Skills and Reading--Kindergarten Through Twelfth Grade." Journal of Educational Psychology, Vol. 64 (1973), pp. 293-298.

Cazden, C. B. "Play with Language and Metalinguistic Awareness: One Dimension of Language Experience." Organization Mondiale pour l'Education Préscolaire, Vol. 6 (1974), pp. 12-24.

Chall, J. Learning to Read: The Great Debate. New York: McGraw Hill, 1967.

Chappell, P. R. Early Development of Awareness of Lexical Units. Paper presented at the annual meeting of the American Educational Research Association, Chicago, 1968.

Clay, M. M. Reading: The Patterning of Complex Behaviour. Auckland, New Zealand: Heinemann, 1972.

Department of Education and Science. A Language for Life (the Bullock Report). London: Her Majesty's Stationery Office, 1975.

DeStefano, J. S. Some Parameters of Register in Adult and Child Speech. Louvain, Belgium: Institute of Applied Linguistics, 1972.

Downing, J. "Children's Concepts of Language in Learning to Read." Educational Research, Vol. 12 (1970), pp. 106-112.

Downing, J. "Children's Developing Concepts of Spoken and Written Language." Journal of Reading Behavior, Vol. 4 (1972), pp. 1-19.

Downing, J., Ed. Comparative Reading. New York: Macmillan, 1973.

Downing, J., and P. Oliver. "The Child's Conception of 'a Word'." Reading Research Quarterly, Vol. 9 (1974), pp. 568-581.

Downing, J., L. Ollila, and P. Oliver. "Cultural Differences in Children's Concepts of Reading and Writing." British Journal of Educational Psychology, Vol. 45 (1975), pp. 312-316.

Downing, J., L. Ollila, and P. Oliver. "Concepts of Language in Children From Differing Socio-economic Backgrounds." Journal of Educational Research (in press).

Elkonin, D. B. "Development of Speech." The Psychology of Preschool Children, A. V. Zaporozhets and D. B. Elkonin, Eds. Cambridge, Massachusetts: MIT Press, 1971.

Elkonin, D. B. "U.S.S.R." Comparative Reading, J. Downing, Ed. New York: Macmillan, 1973.

Fitts, P. M., and M. I. Posner. Human Performance. Belmont, California: Brooks-Cole, 1967.

Francis, H. "Children's Experience of Reading and Notions of Units in Language." British Journal of Educational Psychology, Vol. 43 (1973), pp. 17-23.

Goodman, K. S. "What We Know About Reading." Findings of Research in Miscue Analysis: Classroom Implications, P. D. Allen and D. J. Watson, Eds. Urbana, Illinois: National Council of Teachers of English, 1976.

Goodman, Y., and C. Burke. "Reading: Language and Psycholinguistic Bases." Reading: Foundations and Instructional Strategies, P. Lamb and R. Arnold, Eds. Belmont, California: Wadsworth, 1976.

Gray, C. T. "Types of Reading Ability as Exhibited Through Tests and Laboratory Experiments." Supplementary Educational Monographs, No. 5. Chicago, Illinois: Department of Education, University of Chicago, 1917.

Holden, M. H., and W. H. MacGinitie. "Children's Conceptions of Word Boundaries in Speech and Print." Journal of Educational Psychology, Vol. 63 (1972), pp. 551-557.

Huttenlocher, J. "Children's Language: Word-phrase Relationship." Science, Vol. 143 (1964), pp. 264-265.

Johnson, H. M. Children in "the Nursery School." New York: Agathon Press, 1972.

Judd, C. H., and G. Buswell. "Silent Reading: A Study of the Various Types." Supplementary Educational Monographs, No. 23. Chicago, Illinois: University of Chicago Press, 1922.

Karpova, S. N. "Osoznaniye Slovesnogo Sostava Rechi Rebeyonkom Doshkolnogo Vozrasta" (Realization of the Verbal Composition of Speech by a Preschool Child). Voprosy Psikhologii (Questions of Psychology), Vol. 4 (1955), pp. 43-55.

Kingston, A. J., W. W. Weaver, and L. E. Figa. "Experiments in Children's Perception of Words and Word Boundaries." Investigations Relating to Mature Reading, F. P. Greene, Ed. Milwaukee, Wisconsin: National Reading Conference, 1972.

Klapper, Z. S. "Psychoeducational Aspects of Reading Disabilities." Children With Reading Problems, G. Natchez, Ed. New York: Basic Books, 1968.

Mattingly, I. G. "Reading, the Linguistic Process, and Linguistic Awareness." Language by Ear and by Eye, J. F. Kavanagh and I. G. Mattingly, Eds. Cambridge, Massachusetts: MIT Press, 1972.

Meltzer, N. S., and R. Herse. "The Boundaries of Written Words as Seen by First Graders." Journal of Reading Behavior, Vol. 1 (1969), pp. 3-14.

Ollila, L., T. Johnson, and J. Downing. "Adapting Russian Methods of Auditory Discrimination Training for English." Elementary English (now Language Arts), Vol. 51 (1974), pp. 1138-1141 and 1145.

Piaget, J. The Language and Thought of the Child. London: Routledge and Kegan Paul, 1959.

Postman, L., and V. Senders. "Incidental Learning and Generality of Set." Journal of Experimental Psychology, Vol. 36 (1946), pp. 153-165.

Reid, J. F. "Learning to Think About Reading." Educational Research, Vol. 9 (1966), pp. 56-62.

Rickards, J. P. and G. J. August. "Generative Underlining Strategies in Prose Recall." Journal of Educational Psychology, Vol. 67 (1975), pp. 860-865.

Robinson, H. M. "Diagnosis and Treatment of Poor Readers With Vision Problems. Clinical Studies in Reading, II." Supplementary Educational Monographs, No. 77. Chicago, Illinois: University of Chicago Press, 1953.

Russell, D. H. The Dynamics of Reading. Waltham, Massachusetts: Ginn-Blaisdell, 1970.

Serafica, F. C., and I. E. Sigel. "Styles of Categorization and Reading Disability." Journal of Reading Behavior. Vol. 2 (1970), pp. 105-115.

Smith, F. Understanding Reading. New York: Holt, Rinehart and Winston, 1971.

Thorndike, E. L. "Reading as Reasoning: A Study of Mistakes in Paragraph Reading." Journal of Educational Psychology, Vol. 8 (1917), pp. 323-332.

Turnbull, K. "Children's Thinking: When is a Letter a Number?" Curriculum and Research Bulletin (Victoria, Australia), 1970, pp. 126-131.

Vernon, M. D. Backwardness in Reading. London: Cambridge University Press, 1957.

Vernon, M. D. Reading and Its Difficulties. London: Cambridge University Press, 1971.

Vygotsky, L. S. Thought and Language. Cambridge, Massachusetts: MIT Press, 1962.